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ABSTRACT

As part of the Teacher Explanation Project (TEP), a study examined the relationships among third-grade teachers' concepts of reading, the concepts of reading they communicated during instruction to low-level readers, and the students' concepts of reading. Subjects, 20 third-grade teachers, participated in the yearlong TEP study conducted in an urban midwest community. Ten teachers in the treatment group were taught to recast traditional basal skills as strategies to be used flexibly and adaptively and to explain to students how to use these strategies in reading texts. Ten control teachers used the basal text in the standard way but received training in the use of management strategies. Results showed that although there was no difference between the concepts of reading stated by teachers trained to be explicit in teaching reading as a strategic sense-making process and those not trained, their students differed in their concepts of reading and the teachers differed in the concepts of reading they communicated during their instruction. The study supports the importance of teachers having both pedagogical content knowledge as well as content knowledge. (Eleven tables of data are included, and 39 references are appended.) (MS)

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Research Series No. 190

TEACHERS' CONCEPTS OF READING, READING CONCEPTS COMMUNICATED DURING INSTRUCTION, AND STUDENTS' CONCEPTS OF READING

Cassandra Book, Joyce Putnam
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Abstract

As part of the Teacher Explanation Project, this study examined the relationships among third-grade teachers' concepts of reading, the concepts of reading they communicated during instruction to low-level readers, and the students' concepts of reading. Although there was no difference between the concepts of reading stated by teachers trained to be explicit in teaching reading as a strategic sense-making process and those not trained, their students differed in their concepts of reading and the teachers differed in the concepts of reading they communicated during their instruction. This study supports the importance of teachers having both pedagogical content knowledge as well as content knowledge.

TEACHERS' CONCEPTS OF READING, READING CONCEPTS COMMUNICATED DURING INSTRUCTION, AND STUDENTS' CONCEPTS OF READING

Cassandra Book, Joyce Putnam, Michael Meloth, and Eva Sivan[1]

Much of the research in the area of instructional communication (see Staton-Spicer & Wulff, 1984, for summary) and the communication categories used in teachers' performance assessments (see summary by McCaleb, 1987) focus on oral communication components of instruction that are subject-matter independent. For example, when teachers' communication style, clarity, fluency, use of questions, use of students' ideas, feedback, or oral language usage are rated, they are viewed as pedagogical acts that are not judged in light of the content being taught. Assessments of teachers' subject matter knowledge is yet another level of teaching competency. However, as Shulman (1986) argues, "Mere content knowledge is likely to be as useless pedagogically as content-free skill. But to blend properly the two aspects of a teacher's capacities requires that we pay as much attention to the content aspects of teaching as we have recently devoted to the elements of teaching process" (p. 8).

Shulman (1986) goes on to "suggest [that] we distinguish among three categories of content knowledge: (a) subject matter content knowledge, (b) pedagogical content knowledge, and (c) curricular knowledge" (p. 9). Within the category of pedagogical content knowledge [he] include[s], for the most regularly taught topics in one's subject area, the most useful forms of representation of those ideas," in a word, the ways of representing and formulating the

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[1]Cassandra Book and Joyce Putnam were senior researchers with the Teacher Explanation Project. Book is assistant dean and professor in the College of Education at Michigan State University and Putnam is professor of teacher education at MSU. Michael Meloth, former research assistant with the project, is assistant professor at the School of Education at the University of Colorado, Boulder. Eva Sivan, former intern with the project, is a doctoral candidate in school psychology at MSU and is on a one-year clinical psychology internship in the Department of Psychiatry and Behavioral Sciences at the University of Washington, Seattle.

subject that make it comprehensible to others" (p. 9). The Teacher Explanation Study (TEP) (Duffy et al., 1986), the basis for this study, was a classroom-based research project that trained teachers to help students become more independent and thoughtful readers through the conscious use of reading strategies. This TEP study was, in effect, an example of teaching pedagogical content knowledge to teachers because they were taught a specific schema for teaching reading strategies for making sense out of text to students.

As an offshoot of the TEP study, researchers examined subsidiary questions about the relationship of the teacher's pedagogical content knowledge and the student's learning of the subject. Specifically, they studied the linkages between teachers' content knowledge (in this case about reading), their instructional practice (focused on their pedagogical content knowledge) and students' learning (including students' awareness of what was taught and their concepts about the subject matter). The teachers' content knowledge was assessed by asking teachers about the concepts they hold about reading. Teachers' pedagogical content knowledge was assessed by scoring the degree to which they explicitly used the TEP model and the way in which they presented the concept of reading as a strategic sense-making process in their instructional talk. Students' learning of reading, for purposes of this study, included their awareness of what was specifically taught in individual lessons, as well as their general concepts of reading.

Students' Concepts of Reading and Metacognitive Awareness

Concepts are the means by which students organize their experience (Ennenbach, 1983). They are general beliefs about the nature of a task, the mechanisms or processes by which the task operates and the role of the person in performing the task. These general notions provide a framework or schema

into which a person assimilates new knowledge and from which the individual draws to apply knowledge to new situations.

The research on reading comprehension has modified definitions of the concept of reading. First, the research established that a relationship exists between students' performance on comprehension tasks and their concepts of reading. Studies found that younger and poorer readers did not conceptualize reading as a sense-making activity whereas older and better readers did (Canney & Winograd, 1979; Johns, 1974; Johns & Ellis, 1976; Paris & Myers, 1981). A link between students' use of metacognitive strategies and their concepts of reading was established by Paris and Myers (1981) and by Forrest-Pressley and Gilis (1983). Myers and Paris (1978) and Canney and Winograd (1979) found that older readers were more aware of the appropriate use of strategies to eliminate blockages in meaning and used skimming strategies that reflected a concept of reading as a meaning-getting process. Younger readers, in contrast, used strategies that were directed toward decoding activities, reflecting a concept of reading quite different from successful readers. Thus, it appears that older and better readers have greater awareness of strategy use and concepts of reading that view reading as a sense-making activity.

Baker and Brown (1984) draw on research relating students' metacognitive processes in reading comprehension and concept development to define a concept of reading. They include the individual's ability to reflect on knowledge as part of their definition of a concept of reading in addition to the knowledge that exists and is applied. A concept of reading, according to Baker and Brown, is both the stable and stateable information a child possesses. Stable information refers to the information a child possesses regarding processes involved in performing a task. This part of the definition is similar to conventional definitions of concepts. Stateable information means the information

a child can reflect on and discuss. This second part of the definition adds to the earlier version the notion of metacognition, or reflection on one's own thinking and knowledge. It assumes a student's active awareness (a) of the information she or he possesses and (b) how to apply it.

Like Brown and Baker, we draw on the research relating students' metacognitive processes in reading comprehension and concept development to define a concept of reading. We define a student's concept of reading as the student's general understanding of the variables of person, task, and strategy involved in the reading process. Our definition focuses on the role of three elements that have been identified as central to metacognition and reading: person, task, and strategy (Brown, Campione, & Day, 1981; Flavell & Wellman, 1977; Paris, Lipson, & Wixson, 1983). The person variable refers to the characteristics of the individual who is engaged in the act of reading, such as "an expert reader monitors his own reading." Task variables refer to the characteristics of the task, such as "reading is a sense-making activity." Strategy variables describe the action a student can take, such as "reading uses skills and/or rules to gain meaning."

Our definition of a concept of reading differs from a definition of metacognition in the degree of specificity. As used in this study, metacognition in reading comprehension refers to the awareness of specific strategies, that is, the specific mental processes, associated with the application of a reading skill that the student is taught during a specific reading lesson. For example, a metacognitive strategy relating to the skill of finding the meaning of multi-meaning words might be:

1. Ask if the sentence makes sense
2. If it doesn't make sense, look for contextual clues that could help you understand the meaning of the word

3. Fill in the meaning

4. Check to see if it makes sense

The underlying concept of the student who uses this strategy might be that reading is a sense-making activity that requires the reader's active involvement.

Acknowledging the relationship between metacognition in reading comprehension and concepts of reading, we predict that students who are aware of the mental processes used in the reading process will have a concept of reading that reflects the knowledge they hold. In other words, students who are aware of the metacognitive strategies used to gain comprehension will view reading, in general, as a sense-making, self-monitoring, problem-solving activity.

Students' Concepts of Reading and Classroom Instruction

Research on teaching suggests that teachers influence student thinking (Blumenfeld, Hamilton, Bossert, Wessels, & Meece, 1983; Brophy & Good, 1974) and are especially successful in doing so when instruction is direct and explicit (Duffy et al., 1986; Pearson, 1985). The research also suggests a link between what teachers think about reading and their students' concepts (Clymer, 1968; Duffy, 1983; Helm, 1985).

Science and mathematics educators have examined the relationship between instruction and students' concepts. Pines and West (1983) suggest that the teacher is responsible as the source of expert knowledge for articulating a concept and helping the student to frame the topic, process, or subject within the appropriate concept. In this case the teacher explicitly identifies the concept and states a definition or set of criteria. We believe, however, that the process of developing a concept in a student can also be implicit in the teacher's instruction. A teacher who has been trained to explain the mental

processes necessary to derive meaning from text and use that training successfully will convey a concept of reading through an instructional approach.

Our belief that a concept can be implicitly conveyed in instruction combines what is known about metacognition and concept development and the role of the teacher in developing students' metacognitive awareness. The larger research project of which this study is a part, the Teacher Explanation Project, has established the relationship between instruction, students' metacognitive awareness of reading lesson content and students' use of reading strategies and students' achievement (Duffy et al., 1986). Students who received more explicit instruction in using reading skills strategically were more aware of lesson content and performed better on the Stanford Achievement Test and the Michigan Educational Achievement Progress than students of teachers who were not trained to be explicit during skill instruction. We predict that expicit instruction of strategy use that increases student awareness of lesson content and the strategic use of skills should help students acquire a better conceptual understanding of reading.

Research on Teaching and Concepts of Reading

It is difficult to find research that links teacher concepts, instructional practice, and student learning. Shulman (1986) calls this one of the "missing programs" in research on teaching. In the few examples that we have found (Doyle, 1977; Morine & Valance, 1975; Peterson & Clark, 1978), the emphasis was on teacher decision making, with little reference to the knowledge of subject matter upon which these decisions were based. In the most recent review of the relationship between teacher thought and action, Clark and Peterson (1986) state that understanding teachers' thoughts and actions should give us a better understanding of how these two components interact to increase or

inhibit student achievement. However, almost no mention is made of teachers' concepts of subject matter or the role these concepts play in planning, interactive decisions, or student learning. Instead, much of the teacher-thinking literature focuses on knowledge of pedagogy that is often "event-specific" and how these events are translated into pedagogical decisions by teachers.

One study which approaches the importance of teachers' knowledge of subject matter is by Duffy (1977), which also was included under the category of teachers' implicit theories and belief systems in Clark and Peterson (1986). This study, most closely approximating an investigation of teachers' concepts of reading, found that the instructional practice of half of the participating teachers coincided with their beliefs about reading. But that of the other half did not.

It is interesting that little research has been conducted in this area. In one respect, teachers can be seen as "experts" in that they possess a great deal of knowledge about and are highly skilled in processes which result in the comprehension of text. Thus, it seems important to examine the role that these concepts play in teaching. Perhaps, as Sedlak (1987), in describing some of the recommendations of the Holmes Report, suggests, many people (including educators) hold a simplistic "bright-person" model of teaching. They see instruction as the delivery of information where the responsibility for making sense of that information is left to the students. Thus, the "teacher's responsibility basically ends when they have told students what they must remember to know and do" (p. 320).

As for methods of pedagogy, some, like Jackson (1968) and Lortie (1975), suggest that many teachers proceed on impulse and intuition, relying on personal experience rather than on reflective thought and professional education. There is some evidence available to the contrary (Clark & Peterson,

1986; Putnam & Duffy 1984) which suggests that teachers' practice does not rely solely on impulse and is directed toward certain planned outcomes. Teachers do appear to possess a great deal of pedagogical knowledge. But the lack of empirical data makes it difficult to know whether this knowledge comes from the concepts of reading possessed by the individual teacher, from their professional education, from their personal experience as a teacher or student, or a combination of all three.

We do know that teachers make many planning decisions that are activity-driven and not oriented toward the cognitive outcomes the activity is intended to produce. Many of the studies of interactive decision making appear to be oriented toward the management aspects of instruction; that is, the ways in which disruptions can be minimized and time on task maximized. This final point is not entirely unexpected. Management is a major concern for teachers, particularly novices (Blumenfeld, Hamilton, Wessels, & Falkner, 1979; Pollard, 1980).

When, where, or how does the teacher's concept of reading enter in to the planning picture? It would seem that if teachers possess an expert's concept of reading, such as understanding reading to be a strategic, planful, goal-oriented activity (Baker & Brown, 1984), then (a) their instructional talk should reflect this concept of reading and (b) students should reflect the concept of reading possessed and communicated by their teacher. Much of the research available does not focus on this concern. The question, then, is whether, regardless of the instructional decisions made by teachers, teachers provide students with a concept of reading associated with successful comprehension and, if so, whether these concepts are associated with students' concepts of reading.

Research Questions

In summary, this study integrates the research on metacognition, reading comprehension, reading instruction, and conceptual development. It defines the students' and teachers' concept of reading as the general understanding of person, task and strategy variables involved in the process of reading. We examine the following questions:

1. What is the relationship between students' awareness of the reading process and their concepts of reading?

2. What is the relationship between teachers' explicitness of instruction and students' concept of reading?

3. Is there a difference between concepts of reading held by students taught by teachers trained in the use of explicit explanation and students taught by control teachers?

4. Is there a difference between concepts of reading expressed during reading instruction by teachers trained to be explicit and those not trained to be explicit?

5. Is there a relationship between the teachers' expressed concepts of reading and the concepts of reading expressed by their low group readers?

6. Is there a difference in the stated concepts of reading between teachers who were trained to explain reading skills as comprehension strategies and those who were not?

7. What is the relationship between teachers' stated concepts of reading and the concepts of reading they communicate during reading instruction?

8. What is the relationship among teachers' stated concepts of reading, teachers' concepts of reading communicated during reading instruction, and their students' concepts of reading?

Methodology

The Data Source: The Teacher Explanation Project

Twenty third-grade teachers participated in the yearlong TEP study conducted in an urban midwest community. All had at least five years of experience in the classroom. Ten teachers in the treatment group were taught to

recast traditional basal skills as strategies to be used flexibly and adaptively and to explain to students how to use these strategies in reading text. The teachers were then asked to incorporate explicit explanations into their instructional interactions during basal text skill instruction with low-group students. Ten control teachers used the basal text in the standard way text in the standard way but received training in the use of the management strategies of Anderson, Evertson, and Brophy (1979).

At intervals of one month all teachers were observed teaching their low reading groups. The treatment teachers were observed one additional time each month to monitor their use of explicit instruction. All the reading skill lessons were audiotaped, transcribed, coded, and rated according to lesson structure, information presented, and means of explanation. The average score for each teacher across the last five lessons was then computed. The lessons used to monitor implementation of the treatment were not included in the computations.

Awareness Measures

Interviews probing the students' metacognitive awareness of the reading lesson were conducted after every lesson with three target students and two alternates randomly selected from the low reading group of both treatment and control teachers. Interviews were audiotaped, coded and rated on the following questions: (a) What was the reading lesson about? (b) How do you do it (the skill)? (c) When is the skill used? The awareness rating scores for all five students from the last five observations were then averaged to arrive at the mean student awareness score for each teacher.

Concept Measures

At the end of the year each target student was asked four questions about his or her generalized concept of reading: (a) What do good readers do?

(b) What is the first thing you do when you are given a story to read? (c) What do you do when you come to a word that you do not know? (d) What do you do when you come upon a sentence you do not understand? These questions measure the three variables of person, task, and strategy that comprise the definition of a concept of reading. Eighteen of the teachers who agreed to be interviewed after participating in the TEP responded to these same questions, as well as nine other questions to assess various aspects of their teaching of reading.

Two coding systems were developed and analyses were performed to assess (a) the particular components present in the concept interviews for each student and teacher and (b) the overall concept of reading held by the student and teacher. The first process of identifying particular elements of each person's concept of reading consisted of performing content analysis of 60 concept interviews (three students in 20 classrooms) and the 18 teacher interviews using procedures suggested by Ericcson and Simon (1980). Initially the researchers listed all the responses to each question and collapsed similar responses to develop categories. An "other" category was created to use for miscellaneous or irrelevant responses. The final categories were reviewed and revised by the researchers by testing the ease of placing responses into the categories. Finally, the transcripts were analyzed for content by two researchers/coders. Twenty-five percent of the transcripts were read by both coders to establish their intercoder reliability of .95.

Semantic differential scales were used to assess the overall concept of reading held by the students. General concepts of reading were distilled from the categorical responses to the four questions, put on 1-7 Likert-type scales of polar opposites, and then designated as being either a person, task, or strategy variable. The following are the 10 dimensions of concepts of reading

according to the three categories of person, task, and strategy. Among the person variables were (a) reading requires effort versus no effort; (b) reading is self-directed versus other-directed; and (c) reading is enjoyable versus reading is unenjoyable.

The dimensions noted under the strategy category were (a) reading involves intentionality to decode versus to get meaning; (b) reading involves problem solving versus does not involve problem solving; (c) reading involves conscious processing versus no conscious processing; (d) reading involves a systematic approach to reading comprehension versus an unsystematic approach; (e) reading uses skills/rules to gain meaning versus to decode; and (f) reading involves selection among strategic processes versus no selection of strategic processes. The single dimension listed under the task category, which describes the kind of task that will be encountered, was reading as a meaning-getting activity versus an activity that does not involve getting meaning.

The 10 dimensions of the concepts of reading were stated as polar opposites on a one to seven scale. Coders read each student interview and made a judgment about the student's concept of reading on each scale with a score of seven indicating the more strategic understanding of the concept. Twenty-five percent of these transcripts, jointly rated, resulted in a reliability of .88. Two researchers, working independently, analyzed the teachers' responses to the four questions using the semantic differential scale for the 10 dimensions. Reliability for these ratings was .87. Also, coders rated the concept of reading communicated during instruction by the teachers. Two education experts both rated 25% of the 120 reading lesson transcripts and reached an intercoder reliability of .87. Half of the remaining transcripts were rated by each of the raters.

Analysis and Results

As background to the statistical analyses performed in the present study, we have included a short description of the analyses used in the larger study. An analysis of covariance using ratings for the first observation as the covariate was peformed to identify differences between treatment and control groups. Teachers trained to be explicit about lesson content were rated significantly higher in explanation behavior than were control teachers for Observations 3-6. An ANCOVA (Analysis of Covariance), using student awareness ratings at the first observation as the covariate, also indicated that students of treatment teachers were rated significantly greater than control group students on awareness of lesson content for Observations 4-6.

Question 1: Pearson Product Moment correlations of the ratings of students' awareness of lesson content with the ratings of students' overall concepts of reading indicate a strong positive relationship at the end of the study (see Table 1). At the end of the year (Observation 6) the higher the students' awareness, the higher their score on seven measures of their concepts of reading. Those students who had a high rating on the student awareness measures were scored as having an overall concept of reading that construed reading as (a) a systematic activity, (b) extracting meaning from text, (c) an activity controlled by the reader, (d) involving problem solving when disruptions occur, (e) requiring the conscious processing of information regarding what the story is about and what the cause of the disruption might be, (f) selecting from among strategies those that are necessary to eliminate the disruption and allow comprehension to proceed, and (g) using reading skills to get meaning from the text.

Question 2: The results to the question are divided into two parts. The first part addresses the problem that training may not be the sole criterion

Table 1

Pearson Product Moment Correlations Between Student Awareness and Concepts Interview

Concepts of Reading	Student Awareness of Concepts					
	Observation 1	Observation 2	Observation 3	Observation 4	Observation 5	Observation 6
Total	-0.2	-0.13	0.2	0.44*	0.38	0.67*
Involves intentionality	-0.4	0.05	0.1	0.13	0.17	0.30
Involves effort	-0.23	0.09	0.17	0.14	0.07	0.33
Is systematic	-0.22	0.26	0.06	0.27	0.2	0.56*
Is self-directed	-0.04	0.46*	0.28	0.45*	0.54**	0.76**
Involves problem solving	-0.3	0.21	0.26	0.39	0.36	0.58*
Skills/rules to get meaning	0.05	0.07	0.42*	0.57**	0.38*	0.66**
Is enjoyable	-0.09	0.01	-0.03	0.19	-0.03	0.04
Purpose is meaning getting	-0.19	0.00	0.14	0.28	0.36	0.48*
Involves conscious processing	-0.23	0.00	0.00	0.34	0.23	0.43*
Selection of strategies	-0.12	0.24	0.22	0.46	0.26	0.58**

*Indicates significant correlation at the .05 level.
**Indicates significant correlation at the .01 level.

for high ratings of explanation behavior. In fact, one teacher from the control group did rate higher than two teachers in the treatment group (see Table 2).

Table 2

Ranking of Teachers by Average Explanation Scores of Lessons 4, 5, 6 With Their Average Student Concept Scores and Average Student Awareness Scores

Teachers x Explanation Score	Students x Concept Score	Students x Awareness Score
+25.667	1.867	5.111
+25.333	4.167	6.800
+24.667	2.733	7.333
+21.333	2.967	5.867
+20.333	2.133	6.533
+19.000	2.700	4.850
+15.667	4.000	5.017
+14.667	1.933	4.222
14.667	3.450	5.600
+13.333	4.600	5.267
+11.667	4.000	5.333
11.667	2.167	2.583
10.667	2.333	3.200
9.667	1.633	2.300
9.667	1.933	3.356
9.333	2.167	4.250
9.333	1.967	2.567
9.333	1.700	3.000
6.000	1.850	2.600
5.000	2.900	5.217

+ Indicates treatment group.

The second part of the results is an examination of the relationship between teachers' explicitness and students' concepts. Pearson Product Moment correlations between the ratings of teachers' explicitness at Lessons 4, 5 and 6 and the overall ratings of students' concepts of reading indicate a positive relationship with some features of students' concepts in Lessons 4 and 5 and no significant relationships in Lesson 6 (see Table 3).

Table 3

Pearson Product Moment Correlations Between Teacher Explanation in Lessons 4, 5, 6 and Students' Concepts Interview

	Concepts of Reading	Lesson 4	Lesson 5	Lesson 6
1.	Involves intentionality	.28	.29	.01
2.	Involves Effort	-.07	-.03	-.30
3.	Is systematic	.24	.21	-.10
4.	Is self-directed	.49*	.45*	.22
5.	Involves problem solving	.32	.37	.04
6.	Skills/rules to get meaning	.59**	.40*	.20
7.	Is enjoyable	.02	.12	-.01
8.	Purpose is meaning getting	.36	.24	.08
9.	Involves conscious processing	.33	.38*	.04
10.	Selection of strategies	.58**	.43*	.07

*Indicates significant correlation at the .05 level.
**Indicates significant correlation at the .01 level.

For example, in Lesson 5, teachers' explicit instruction was positively related to students' concepts of reading as (a) being self-directed, (b) using skills and rules to get meaning, (c) involving conscious processing, and (d) involving a selection of strategies. The absence of a significant relationship between explicitness of instruction and students' concepts of reading in Lesson 6 is in contrast to our hypothesis, but nevertheless intriguing given the relationships in the previous observations. Further study is needed to determine the influence of time of year, the cumulative effectiveness of this method of instruction, and how the process of concept development relates to explicit instruction of reading process.

Question 3: Two types of analyses were used to study the question, "Is there a difference between the concepts of reading held by students taught by teachers trained in the use of explicit explanation and by control teachers?"

Statistical Differences in Students' Concepts of Reading

An examination of the means and standard deviations for the concept interviews indicated differences between the treatment and control group (see Table 4).

Table 4

Means (X) and Standard Deviations (SD) for Concept Interviews

Concepts of Reading	Treatment		Control	
	X	SD	X	SD
Total	3.11	(1.01)	2.21	(0.56)
Involves intentionality	2.53	(1.04)	1.78	(0.85)
Involves effort	3.33	(1.65)	3.12	(1.37)
Is systematic	2.96	(1.70)	1.78	(1.13)
Is self-directed	4.45	(0.89)	2.68	(0.89)
Involves problem solving	3.00	(1.16)	1.93	(0.92)
Uses skills & rules to get meaning	2.57	(1.04)	1.68	(0.50)
Is enjoyable	4.13	(0.23)	3.97	(0.39)
Is meaning-getting activity	2.77	(1.17)	1.73	(0.76)
Involves conscious processing	3.37	(1.44)	2.13	(0.80)
Involves selection of strategies	2.00	(1.02)	1.28	(0.46)

A multivariate analysis of variance (MANOVA) procedure was used to examine differences between groups. The 10 overall concepts of reading categories served as the dependent measures. Results indicated that students in treatment classrooms were rated significantly higher in their concept of reading than their control group counterparts ($F(10,9) = 7.558$, $p = .003$). Univariate F-tests revealed significant differences in 5 of the 10 concept categories: (a) reading is self-directed; (b) reading involves problem solving; (c) reading uses skills and rules to get meaning; (d) the purpose of reading is meaning getting; and (e) reading involves conscious processing (see Table 5).

Table 5

MANOVA of the Differences Between the Concepts of Reading Held by Students Taught by Teachers Trained in the Use of Explicit Instruction of Mental Processes and Those Taught by Control Teachers

Is self directed	$F(1,18) = 19.34^{**}$
Invoves problem solving	$F(1,18) = 5.14^{*}$
Involves skills, rules to get meaning	$F(1,18) = 5.65^{*}$
Purpose is meaning getting	$F(1,18) = 5.48^{*}$
Involves conscious processing	$F(1,18) = 5.57^{*}$

*Indicates significance at the .05 level.
**Indicates significance at the .01 level.

Descriptive Differences in Students' Concepts

A cross tabulation of the specific elements in each of the answers to the four questions regarding their concepts of reading yielded some significant differences between treatment and control groups. Whereas there were no significant differences between the groups on their answers to the question "What do you do when you don't understand a story or a paragraph?" which demonstrates a general understanding of strategy, there were significant differences in their responses to the three questions: (a) What does a good reader do? (understanding of person) (b) What is the first thing you do when you're given a story or a paragraph to read? (understanding of task) and (c) What is the first thing you do when you don't understand a word or a sentence? (understanding of strategy).

The most frequent responses to the question "What does a good reader do?" were "reads a lot" and "generally reads well." Fourteen and a half percent of the students in the treatment group as compared to 21.1 % of those in the control group said a good reader reads a lot; and 27.3 % of the treatment group students and 12.3 % of the control group students said a good reader generally reads well. Whereas these differences do not provide much information regarding their concepts of reading, they do point out that the treatment group students tended to focus more on the quality of a good reader's ability rather than on the quantity of reading. Also in response to the first question, significantly more students in the treatment group gave answers that revealed their knowledge of the use of specific skills or strategies for solving problems encountered in reading. Of the total responses, 7.3% of the students in the treatment group stated "good readers use specific reading skills or strategies to make sense of the reading," as compared to zero in the treatment group.

When asked, "What is the first thing you do when you're given a story or a paragraph to read?" 8.1% of the treatment group as compared to zero in the control group indicated that they would use strategic reading processes to make sense of the story. Forty-three and a half percent of the treatment group students said the first thing they would do is "read the story" as compared to 18.2% of the students in the control group. These differences between groups suggest that the students in the treatment group are less tied to following directions from the teacher and are more self-directed. This finding resubstantiates the significant differences found in the MANOVA analysis in which the treatment group students perceived reading to be self-directed and involving rules and strategies in problem solving.

When asked, "What do you do when you don't understand a word?" the largest percentage of both groups indicated that they would use a specific skill (50.9% of the treatment group and 47.4% of the control group). However, 28.1 percent of the treatment group students said that when they do not know a word they would use a strategy as compared to only 7.9% of the students in the control group. As with the responses to question 2, these findings also reinforce the differences found between treatment and control groups on the overall concept ratings which indicate that treatment students viewed reading as involving problem solving, knew and used rules and strategies, and understood the purpose of reading as sense making.

Also in response to question 3, 10.5% of the treatment group students as compared to 28.9% of the control group students indicated that they would ask for help when they do not understand a word. This relates to both the responses to question 2 and to the signigicant difference found between the groups on the experts' rating of the overall concept of reading as being self-directed.

Question 4: To answer the research question regarding differences in the concept of reading expressed during reading instruction by those teachers trained to be explicit (treatment) and those not trained (control), two analysis were used: MANOVA and repeated measures analysis of variance. One MANOVA was performed to examine any initial (Observation 1) differences between groups in the concepts of reading communicated during instruction. There were no significant differences between treatment and control (F (10,9) = 1.657, p = .230). The repeated measures analysis averaged the 10 categories for each of the 6 observations. These six averaged ratings were used as time points in the repeated measures analysis. Results indicated a significant main effect for time (F (1,18) = 6.316, $p < .001$) and a significant group x time interaction favoring the treatment group (F (5,14) = 3.115, p = .034). Roy-Bargmann Stepdown F-tests, a measure of the increase of concept rating from one observation to the next, revealed significant growth between the first and second observation (F (1,18) = 5.971, p = .025) (see Table 6).

These data suggest that following the baseline observation, treatment teachers were rated higher than control teachers at each of the five subsequent observations and that the greatest increase in ratings occurred immediately after training (i.e., Observation 2). These ratings revealed that treatment teachers were more likely to communicate a concept of reading which indicated that reading is a strategic process of acquiring meaning from text.

In order to examine which of the 10 concept categories teachers communicated during instruction, a second MANOVA procedure was used. Each of the 10 concept variables was averaged across Observations 2 through 6 (Observation 1 was not used because of the low and nonsignificant ratings within each group). These 10 averaged ratings were then used as the dependent variables in the analysis. Results revealed a significant overall main effect favoring the

treatment group (F (9,10) = 11.436, $p < .001$). Univariate F-tests were significant for all categories except Variable 7, "reading is enjoyable." Means and standard deviations are listed in Table 7.

Table 6

Means and Standard Deviations (SD) of Overall Concept Rating Communicated by Teachers for Observations 1 through 6

	Treatment	Control
	Means (SD)	Means (SD)
Observation 1	4.130 (1.365)	3.020 (9.840)
Observation 2	4.940 (1.314)*	3.310 (0.840)
Observation 3	5.880 (0.861)**	3.170 (0.980)
Observation 4	5.250 (1.111)**	3.170 (0.933)
Observation 5	5.870 (0.665)**	3.170 (1.069)
Observation 6	5.690 (0.960)**	2.990 (0.924)

*Indicates ANCOVA, P < .05
**Indicates ANCOVA, P < .01

Table 7

Means and Standard Deviations (SD) for the Average of Each of the 10 Concept Categories Communicated by Teachers Across Observations 2 through 6

	Treatment		Control	
	Means	(SD)	Means	(SD)
Category 1	5.98**	(0.906)	2.92	(0.668)
Category 2	5.88**	(0.743)	3.70	(0.823)
Category 3	5.74**	(0.966)	4.02	(1.039)
Category 4	5.80**	(0.909)	3.50	(0.896)
Category 5	5.96**	(0.747)	2.91	(0.678)
Category 6	5.78**	(1.047)	2.92	(0.668)
Category 7	4.266**	(0.479)	4.088	(0.142)
Category 8	6.06**	(0.984)	2.52	(0.583)
Category 9	5.96**	(0.893)	3.70	(0.518)
Category 10	3.82**	(1.515)	1.02	(0.063)

** Indicates MANOVA, $P < .01$

These results suggest that training in explicit instruction is related to enhanced statements about the concepts of reading communicated during instruction. Specifically, treatment teachers as compared to control teachers made significantly more statements about a concept of reading similar to those expressed by their pupils. The treatment teachers included nine of the variables expressed by their pupils: reading involves intentionality to get meaning (1), reading involves effort (2), reading is systematic (3), reading is self-directed (4), reading involves problem solving (5), reading involves using skills/rules to gain meaning (6), reading is for the purpose of getting meaning (8), reading involves conscious processing (9), and reading involves selections among strategic processes (10).

Question 5: To answer the question regarding the relationship between the concepts of reading communicated by teachers during instruction and their students' concepts of reading, Pearson Product Moment Correlations were performed. To do so, each of the 10 concept categories were averaged across Observations 2 through 6 (Observation 1 was not used because of the low and non-significant ratings within each group). These 10 averaged ratings were then correlated with student concepts of reading. Student concepts were rated using the same 10 categories and 7-point Likert-type scale used in the teacher ratings. Results indicate that the concepts of reading expressed by teachers during reading instruction and student concepts of reading were significantly correlated on 4 of the 10 categories: (a) reading is a self-directed activity; (b) reading involves problem solving; (c) reading involves the use of skills and rules to get meaning; and (d) reading involves the selection among strategic processes (see Table 8).

Question 6: Question 6 asked whether there was a significant difference in the stated concepts of reading between teachers who were trained to explain

Table 8

Correlations between Teachers' Concepts of Reading Communicated During Instruction and Students Reported Concepts of Reading

	Means
Category 1	.254
Category 2	.094
Category 3	.293
Category 4	.610**
Category 5	.427*
Category 6	.481
Category 7	.033*
Category 8	.273
Category 9	.298
Category 10	.530**

*Indicates significant correlation P < .05.
**Indicates significant correlation P < .01.

reading skills as comprehension strategies and those who were not. Ratings on the 10 dimensions of concepts were used as the dependent measured in a multivariate analysis of variance. No differences were found in teachers' stated concepts of reading (F (10,7) = 1.354, p = .353). The means for averaged overall concept ratings (sum of the 10 dimensions) was 5.87 (SD = 0.969) for the treatment group and 4.680 (SD = 1.194). All teachers possessed a concept that

characterized reading as a strategic, planful, and goal-oriented process of comprehending text (see Table 9).

Table 9

Means ($\bar{X}$) and Standard Deviations (SD) for Teachers' Concept of Reading

Concepts of Reading	Treatment $\bar{X}$ (SD)	Control $\bar{X}$ (SD)
Reading involves intentionality/planning	6.00 (1.31)	5.50 (1.18)
Reading involves effort	5.87 (0.64)	5.60 (0.52)
Reading is systematic	5.87 (0.54)	4.80 (1.47)
Reading is self-directed	5.62 (1.06)	5.00 (1.55)
Reading involves problem solving	4.87 (1.88)	4.00 (2.26)
Reading requires the use of skills and rules	5.12 (1.72)	4.90 (1.37)
Reading is enjoyable	5.87 (0.64)	5.50 (0.53)
Purpose of reading is to get meaning from text	6.25 (0.89)	5.70 (1.42)
Reading involves conscious processing/awareness	5.87 (0.99)	4.10 (1.91)
Reading requires the selection of strategies	5.50 (2.20)	4.50 (1.71)

Question 7: A Pearson Product Moment Correlation was used to examine the relationships and no significant correlations were found between teachers'

stated concepts of reading and their concepts communicated during instruction on any of the 10 concept categories (see Table 10).

Table 10

Pearson Product Moment Correlations for Teacher Concepts Communicated During Instruction a

Reading involves intentionality/planning	r = .007 (p = .489)
Reading involves effort	r = .129 (p = .305)
Reading is systematic	r = -.053 (p = .417)
Reading is self-directed	r = -.069 (p = .393)
Reading involves problem solving	r = .011 (p = .483)
Reading requires the use of skills and rules	r = .105 (p = .339)
Reading is enjoyable	r = .177 (p = .240)
Purpose of reading is to get meaning from text	r = .099 (p = .348)
Reading involves conscious processing/awareness	r = .235 (p = .174)
Reading requires the selection of strategies	r = -.088 (p = .364)

a Ratings for concepts communicated during instruction are averages across Observations 2 through 6.

Question 8: There were no significant correlations between teachers' stated concepts of reading and students' concepts of reading on any of the 10 concept categories (see Table 11).

Table 11

Pearson Product Moment Correlations for Teacher Concepts and Student Concepts

Reading involves intentionality/planning	$r = .075$ ($p = .383$)
Reading involves effort	$r = -.301$ ($p = .113$)
Reading is systematic	$r = .126$ ($p = .309$)
Reading is self-directed	$r = .049$ ($p = .424$)
Reading involves problem solving	$r = .017$ ($p = .471$)
Reading requires the use of skills and rules	$r = .203$ ($p = .209$)
Reading is enjoyable	$r = .035$ ($p = .445$)
Purpose of reading is to get meaning from text	$r = .194$ ($p = .221$)
Reading involves conscious processing/awareness	$r = .270$ ($p = .140$)
Reading requires the selection of strategies	$r = .102$ ($p = .343$)

Conclusions

Students' Concepts of Reading

The results of the study support the hypothesis that students' concepts of reading are related to instruction and student cognitive processing. The students of teachers who explicitly teach reading skills as comprehension

strategies show a significant positive relationship between high ratings in their awareness of strategy use when encountering blockages to meaning and having concepts of reading that reflect a sense-making approach to reading comprehension.

The results of this study also emphasize the importance of instruction. They suggest that teachers who are explicit in their instruction can influence students' awareness of the practical need for strategy use when encountering problems, can instruct students in specific strategies in order to enable them to be in control of the reading process, and can help students to conceptualize the reading process as a sense-making activity. In successfully instructing low-level readers to understand that the purpose of reading is to make sense, teachers provide the conceptual framework necessary for application and generalization of strategic awareness and knowledge. Therefore, consistent with earlier research by Flavell and Wellman (1977), this study has demonstrated the positive effect of explicit explanation on students' concepts of reading.

Despite the clear indication of an overall positive effect of the treatment on students' concepts of reading, the findings were not consistent across all of the observations. In particular, there was a discrepancy found between the last and previous observations. Two factors account for this anomaly. First, the explicitness scores of Observation 6 were generally lower, thus reducing the range of the scores. This slight reduction in scores probably reflects the decrease in time that teachers have to plan and conduct lessons given the pressures of the end-of-the-year activities. This might have resulted in insufficient variance between scores to permit a significant association with the concept variables. Second, teachers' overall explicitness rating may not be the appropriate measure to use in investigating the relationship

between instruction and students' concepts of reading. The measure rates what teachers say about the content of the reading lesson, which might not overlap with how they communicate concepts of reading during their instruction. These limitations need to be addressed in further research.

Results of the study have helped to measure what is meant by our definition of concept of reading: a student's general understanding of the variables of person, task, and strategy. We asked four questions that attempted to focus on the student's understanding of the three variables and arrived at 10 dimensions of a student's overall concept of reading. These dimensions point to a concept of reading primarily oriented to an understanding of person and strategy variables. The question must be raised whether this is indeed how students conceptualize reading, or if it is an artifact of the questionnaire, or perhaps a function of the reading skill lessons which preceded the interview and focused on strategy use.

The broader implications of this study are related to the development of two types of instructional programs: (a) those that are intended to develop metacognitive and cognitive abilities in learners, and (b) those that are intended to change conceptual understandings. As part of the effort to develop self-directed readers capable of independently applying metacognitive and cognitive skills when reading, some believe that teaching specific strategies or general problem-solving heuristics that are then applied in a wide variety of conditions can aid in the development of conceptual understanding (Dansereau, 1985; Weinstein & Underwood, 1985). Other instructional programs focus on identifying misconceptions and changing conceptions during instruction in the belief that by changing conceptions, learners will change their practice (Pines & West, 1983).

These approaches do not consider three important conditions: (a) that learners differ in their abilities to process information; (b) that different subject matter may require different problem-solving heuristics; and (c) that learning requires practice as well as changed concepts. Upon considering the importance of these conditions for learning, this study has greater significance. It indicates the usefulness of focusing on the processes involved in learning within a particular subject matter. During classroom instruction, emphasis on the sense-making goal of reading comprehension and on developing students' ability to restructure skills as strategies in order to remove blockages to meaning in the text results in students conceptualizing the reading activity as an active, self-directed, meaning-getting process.

Teachers' Communication of Concepts of Reading

The results indicate that teachers trained in the explicit explanation of reading skills were rated higher than control teachers in their communication of a concept of reading as a strategic process. Control teachers communicated concepts of reading as an activity that requires little conscious effort or strategic ability. Specifically, treatment teachers were significantly more likely to make statements about reading which reflect reading as involving (a) intentionality, (b) effort, (c) a systematic approach, (d) self-direction, (e) problem solving, (f) use of rules/skills to get meaning, (g) meaning getting, (h) conscious processing, and (i) selection. This study complements the Teacher Explanation Project in that TEP documented the impact of the treatment on the teachers' method of instruction; that is, treatment teachers were more explicit. This current study confirms significant differences in the substance of the messages conveyed by treatment and control teachers; treatment teachers communicated a concept of reading as a strategic process and control teachers did not.

The concepts of reading expressed by teachers during reading instruction and the concepts of reading expressed by their pupils were significantly related on 4 of the 10 variables: (a) reading is self directed, (b) reading involves problem solving, (c) reading involves using skills/rules to get meaning, and (d) reading involves selection among strategic processes. What is surprising is that there are not more significant correlations between teacher expressions of concepts and students' concepts of reading. But, the four significant correlations point out the importance of the person and strategy categories of a concept. The six remaining variables show a positive, but nonsignificant relationship. These data suggest that teachers did communicate a concept of reading that included variables similar to those expressed by their students at the end of the school year.

For the four significant variables it may be that the students acquired them from their teachers' talk during reading instruction. However, this finding raises other questions for our consideration. For example, what is the magnitude of teacher behavior required to influence their students? What is the nature of student selective perceptions on what they gain from teachers' instruction? Is there a difference between the concepts of reading held by teachers who are trained to conceptualize and conduct reading skills instruction in a fundamentally different manner then those not trained to do so?

If the concepts held by students affect the way they learn, then it behooves teachers to control any factor that contributes positively to the students' conceptual knowledge. This study demonstrates that the method (e.g., explicitness) and concepts communicated by teachers is related to the concepts formed by students. Teachers who are explicit in their explanation about the strategic nature of the reading process have positive impacts on students.

Teachers' Concepts of Reading

None of the research hypotheses regarding teachers' concepts of reading were supported. From an experimental design perspective, the lack of significant findings may be attributable to at least three factors: (a) the small sample size, (b) the training of 10 of the 18 teachers in explicit instruction, and (c) a possible ceiling effect. Thus, the results of this study may be due to its design.

Despite the concerns of the experimental design, however, these results do suggest several areas for additional research on teaching and teacher education. If, as this study suggests, teachers in both groups are equivalent in their concepts of reading as a strategic, goal-oriented activity, yet differ in their effectiveness in communicating these concepts to students, an important question is "Why is there such a discrepancy between teachers' concepts of reading and reading instruction?" All of the teachers can be considered "experts" in that they are successful and proficient readers and that they recognize the value of strategic actions as a means to understand what they read. Yet, at the beginning of the study (i.e., baseline ratings of explanation before training was introduced), few teachers were explicit during instruction about their concept of reading. In addition, the consistently low concept ratings communicated during instruction by the control teachers holds little resemblance to their concepts of reading stated during the end-of-year interview.

Why, then, do control teachers not incorporate this knowledge into their instructional practice? It is not because the highly routinized activity of comprehension cannot be verbalized during interviews or communicated during instruction. Treatment teachers were quite proficient at doing so. It is not because concepts of reading cannot be made understandable to students, for the

results of the Teacher Explanation Project (Duffy et al., 1986) show that teachers can communicate and model this information and that, in doing so, students' concepts of reading and their ability to read better improve on a variety of measures. It is not because the basal text series used as the curriculum prohibited teachers from communicating in their lessons a concept of reading that is strategic in nature for the teachers in this study taught the lessons they would normally teach using the materials included in their basal series.

What, then, might it be? The control teachers in this study apparently did not reflect upon or recognize the relationship between what they knew about the nature of the subject matter and how they could communicate this information during instruction; that is, they may lack the specific pedagogical content knowledge to know how to teach reading in a manner that reflects their views of reading as a strategic process. The problem may be what Shulman (1986) spoke of when he said that teachers need both knowledge of content and the knowledge about how to teach it. This bears a strong resemblance to Jackson's (1968) and Lortie's (1975) concerns about the degree to which teachers reflect about their instruction. It also is similar to findings in the teacher decision-making literature that cite the over-emphasis on activity-oriented instruction at the expense of cognitive-oriented instruction (Clark & Peterson, 1986).

It could also be argued that teacher education programs and reading methods textbooks deemphasize the importance of the reflective practitioner, particularly when it comes to using one's personal knowledge of how the subject matter is structured, organized, and used during reading (Lanier & Little, 1986; Durkin, 1985). Reading methods are often seen as just that, methods to use to communicate reading curriculum. Teachers who hold the "smart-person"

model of learning mentioned by Sedlak (1987) may believe that communication of lesson content is a one-way delivery system and that, once delivered, it is up to the student to integrate the content appropriately. Preactive and interactive decisions are geared toward the "smart-person." Thus, it is not surprising to find that many teachers consider the activity or the content to be covered as a major goal of instruction (Clark & Peterson, 1986).

In addition, the ways in which basal reading series are structured and organized, particularly in the early years, such that basic reading skills are often presented as isolated lessons with little reference to their usefulness within the structure of a strategic concept of reading, contributes to the problems teachers have in teaching reading in a strategic sense-making manner (Durkin, 1985). The original rationale for these basal series was to provide the teacher with a set of lessons that would reduce the time required to plan, organize, and present reading lessons. But if teachers are not taught to be reflective in their approach to instruction, these text series may only serve to reinforce the lack of connection between what they know about reading and how they are communicating it to students.

Summary

In summary, this study represents an initial exploration of the relationships among teachers' concepts of reading, the concepts communicated during instruction, and students' concepts of reading. This study suggests that teachers who were trained to be more explicit about reading skills as strategies also expressed, during instruction, a concept of reading as being strategic. During instruction control teachers did not communciate a concept of strategic reading. This study found that concepts of reading held by control teachers were similar to those of treatment teachers. However, there was no

correlation among the teachers' stated concepts of reading, concepts communicated during instruction, and students' concepts of reading. This suggests that teachers may possess content knowledge, that in this case is knowledge about reading, but without training (as with the control group) may still lack the pedagogical content knowledge that allows the teacher to explain the reading content to students in a manner congruent with their content knowledge.

Teacher education programs should stress the importance of both content and pedagogical content knowledge. Methods of teaching reading courses should include the teacher explanation model as a vehicle of enhancing teachers' pedagogical content knowledge in teaching reading. In addition, teacher education programs should emphasize the value of reflection on one's teaching so that preservice and inservice teachers can better integrate what they know about subject matter and effective pedagogical means to enhance their instruction of that content.

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